

DEPARTMENT OF TRANSPORTATION

Research and Special Programs Administration

49 CFR Parts 173 and 179

[Docket No. HM-175; Amdt. Nos. 173-173, 179-35]

Specifications for Railroad Tank Cars Used To Transport Hazardous Materials

AGENCY: Materials Transportation Bureau (MTB), Research and Special Programs Administration, DOT.

ACTION: Final rule.

SUMMARY: This amendment makes changes in the construction and maintenance standards for railroad tank cars used to transport hazardous materials. References to various specification tank cars are to DOT specifications. The changes are as follows:

(1) After December 31, 1986, specification 105 tank cars built before September 1, 1981, that have a capacity exceeding 18,500 U.S. gallons and are carrying a flammable gas, anhydrous ammonia, or ethylene oxide must be equipped with lower half tank head protection (such as a head shield);

(2) After December 31, 1986, specification 105 tank cars built before September 1, 1981, that have a capacity exceeding 18,500 U.S. gallons and are carrying a flammable gas or ethylene oxide must be equipped with either: (a) High temperature thermal insulation (800° material) and safety relief valves sized according to the requirements for specification 112 and 114 tank cars, or (b) high temperature thermal insulation (550° material) and currently installed safety relief valves; and

(3) After December 31, 1986, specification 111 tank cars that have a capacity exceeding 18,500 U.S. gallons and are carrying a flammable gas or ethylene oxide must be equipped with lower half tank head protection and either (a) high temperature thermal insulation (800° material) and safety relief valves sized according to the requirements for specification 112 and 114 tank cars, or (b) high temperature thermal insulation (550° material) and currently installed safety valves.

The rule requires that all large capacity specification 105 and 111 tank cars used to transport specifically identified hazardous materials must be equipped with the same tank head and thermal safety systems that are required on newly built specification 105 tank cars and on all specification 112 and 114 tank cars used to transport those same hazardous materials.

This action is being taken to increase the safety of transportation by rail of hazardous materials.

EFFECTIVE DATE: March 1, 1984.

FOR FURTHER INFORMATION CONTACT: Mr. Philip Olekszyk, Office of Safety, Federal Railroad Administration, Washington, D.C. 20590. (202) 426-0897.

SUPPLEMENTARY INFORMATION: In the early 1970's DOT commenced its review of specifications for pressure tank cars. There were a number of serious railroad accidents involving rail transportation of flammable compressed gases, toxic compressed gases, and other hazardous materials. Most of these accidents involved uninsulated pressure tank cars of large capacity (over 18,500 U.S. gallons) built to specifications 112 and 114.

Since the specification 112 and 114 tank car shipments of hazardous material were determined to present a more serious threat to public safety, MTB and the Federal Railroad Administration (FRA) assigned first priority to improving the construction standards applicable to those cars. It was further decided that after these specification 112 and 114 tank cars had been structurally upgraded, the MTB and FRA would consider a revision of the standards applicable to the specification 105 tank cars.

Accordingly, on September 15, 1977, MTB published a final rule in Docket HM-144 (42 FR 46306). In summary, the rule requires that:

(1) Existing and newly built specification 112 and 114 tank cars used to transport flammable gases such as propane, vinyl chloride, and butane have both thermal protection (large capacity safety relief valves and high temperature thermal insulation) and tank head protection (such as a head shield);

(2) Existing and newly built specification 112 and 114 tank cars used to transport anhydrous ammonia have tank head protection; and

(3) All specification 112 and 114 tank cars be equipped with special couplers designed to resist coupler vertical disengagement (shelf couplers).

After the upgrading of specification 112 and 114 tank cars was substantially completed, MTB initiated rulemaking for specification 105 tank cars. On January 26, 1981, MTB published a final rule in Docket HM-174 (46 FR 8005) affecting new construction of specification 105 tank cars. The rule requires that:

(1) Specification 105 tank cars built before March 1, 1981, be retrofitted over a one-year period ending on February 28, 1982, with a coupler vertical restraint system equivalent to that required on specification 112 and 114 tank cars;

(2) After February 28, 1985, all other specification tank cars be equipped with a coupler vertical restraint system equivalent to that required on specification 112 and 114 tank cars;

(3) After February 28, 1981, newly built specification 105 tank cars be equipped with a coupler vertical restraint system equivalent to that required on specification 112 and 114 tank cars;

(4) After August 31, 1981, newly built specification 105 tank cars transporting flammable gases, anhydrous ammonia, and ethylene oxide be equipped with a tank head puncture resistance system equivalent to that required on certain specification 112 and 114 tank cars (S, T, and J cars);

(5) After August 31, 1981, newly built specification 105 tank cars transporting flammable gases and ethylene oxide be equipped with high temperature thermal insulation equivalent to that required on certain specification 112 and 114 tank cars (T and J cars); and

(6) After August 31, 1981, newly built specification 105 tank cars transporting flammable gases and ethylene oxide be

equipped with safety relief valves sized according to the requirements for specification 112 and 114 tank cars.

On July 21, 1980, the same day the notice of proposed rulemaking in Docket HM-174 (45 FR 48671) was issued, MTB also issued an advance notice of proposed rulemaking (ANPRM) in Docket HM-175 (45 FR 48668). That notice sought additional information to allow an evaluation of the need, means, and cost to extend the specified puncture and thermal protection levels of specification 112 and 114 tank cars to:

(1) Existing specification 105 tank cars used to transport the same hazardous materials permitted in specification 112 and 114 tank cars;

(2) Existing specification 105 tank cars used to transport other hazardous materials such as ethylene oxide, butadiene, poisons, and combustible and flammable liquids or solids; and

(3) All other new and existing specification tank cars used to transport the same hazardous materials permitted in specification 105 tank cars, *e.g.*, specification 111 tank cars.

After analyzing the comments received in response to the ANPRM and comprehensively evaluating the costs and benefits of a variety of potential regulatory options, MTB issued a notice of proposed rulemaking (NPRM) in HM-175 on April 14, 1983 (48 FR 16188). The NPRM, which is substantially the same as the final rule, proposed the following requirements:

(1) After December 31, 1986, specification 105 tank cars built before September 1, 1981, that have a capacity exceeding 18,500 U.S. gallons and are carrying a flammable gas, anhydrous ammonia, or ethylene oxide would have to be equipped with lower half tank head protection (such as a head shield);

(2) After December 31, 1986, specification 105 tank cars built before September 1, 1981, that have a capacity exceeding 18,500 U.S. gallons and are carrying a flammable gas or ethylene oxide would have to be equipped with:

(a) High temperature thermal insulation; and
(b) Safety relief valves sized according to the requirements for specification 112 and 114 tank cars; and

(3) After December 31, 1986, specification 111 tank cars that have a capacity exceeding 18,500 U.S. gallons and are carrying flammable gas or ethylene oxide would have to be equipped with: (a) Lower half tank head protection; (b) high temperature thermal insulation; and (c) safety relief valves sized according to the requirements for specification 112 and 114 tank cars.

A total of 25 comments in response to the NPRM were received, representing a

diverse group of interested persons. The commenters include the Association of American Railroads (AAR), major chemical and petroleum companies, tank car leasing companies, manufacturers of high temperature insulating materials, shippers, several fire chiefs and one state association of fire chiefs, numerous trade associations of shippers, tank car owners, and the National Transportation Safety Board (NTSB).

A number of commenters generally endorsed the proposed rule since it would increase the level of safety in the transportation of the affected hazardous materials. One such commenter, NTSB, urged that consideration be given to further rulemaking to address other hazardous materials and the smaller capacity specification 105 tank cars (under 18,500 U.S. gallons) transporting liquefied flammable gases (LFG), anhydrous ammonia, and ethylene oxide. In that regard, FRA and MTB will continue to evaluate the need for new rules which exceed the current requirement that all tank cars transporting a hazardous material, after March 1, 1985, be equipped with self couplers. As indicated in the preamble to the notice of proposed rulemaking in this docket, retrofitting the smaller capacity specification 105 tank cars does not appear to be justified on a benefit/cost basis.

Several commenters, including the AAR and a major ethylene oxide shipper/tank car owner, supported the proposed tank head and thermal insulation requirements, but opposed the requirement to retrofit with a large capacity safety relief valve.

A number of commenters opposed the proposed rule on the belief, without explanation, that the costs exceed the benefits. Other commenters who opposed the rule in whole or in part, or who believed that the rule is premature, more fully explained the basis of their objections. These objections also related generally to the cost/benefit issue, principally by challenging the accuracy of both the cost estimates (cost of retrofit and number of cars involved) and the benefit estimates (effectiveness rate, statistical base for accident frequency, and impact of prior rulemakings). No commenters disputed the technical feasibility of retrofitting tank cars with the safety systems proposed. Apart from a question about the need for a large capacity safety relief valve in addition to high temperature thermal insulation (800°F material in the simulation pool fire test), no commenters disputed the belief that tank head and thermal protection would

improve safety; some questioned how much improvement would be achieved.

Several commenters stated that FRA's \$12,000 cost estimate to retrofit a tank car is too low. They suggested a \$14,000 to \$15,000 range as reflecting the true current cost. FRA agrees that the \$12,000 cost in the economic impact analysis developed for the NPRM is lower than the current cost. That analysis which is comprehensive and detailed, was begun at the time of the 1980 ANPRM and uses 1980 dollars for both the costs and benefits. The final economic impact analysis includes an updating to 1983 dollars for both costs and benefits. In 1983 dollars, the cost of retrofitting a car is estimated to be approximately \$14,000. Adopting a conservative approach, the same inflation factor (Department of Labor's Consumer Price Index) was applied on the benefit side, even though many of the constituent parts of the benefit side were rising at a faster pace, *e.g.*, medical costs.

The result of the update is that the benefit/cost ratio remains the same and would still be highly favorable (1.42) even if a \$15,000 retrofit cost figure were used.

Some commenters felt that FRA had not adequately considered the cost of valve changes in its estimation of retrofit costs. FRA is not convinced that its earlier cost estimate is too low. However, under the final rule appropriate thermal protection may be achieved either by a given level of insulation and the larger safety valve or by a greater level of insulation without any changes to the existing valve. In its initial analysis (Economic Impact Analysis of the Retrofit of 105 and 111 Tank Cars Carrying Hazardous Materials, Exhibits FRA-10,300, FRA-10,310) FRA showed that the cost of the two options is the same. According to the figures used in that study, which represent costs in 1980 dollars, it would cost \$8,000 to provide the required level of thermal protection. If the larger valve is installed, the valve cost per car is \$1,000 and the installation cost is \$5,000. If the smaller valve is not replaced, \$8,000 worth of insulation must be installed. In the proposed rule, the option was limited to those cars with a manway less than 18 inches in diameter. The extra insulation option, therefore, was not available for most of the cars to be retrofitted. This limitation is not in the final rule.

Several of the commenters believe that FRA's estimate of retrofit costs is too low. This is based on the commenters' estimates of the number of cars required to be retrofitted. However, these commenters did not provide FRA

with details as to the source of their information or the methods by which they calculated their estimates. FRA can only reiterate the methodology it employed in arriving at the estimate of 3,028 cars requiring retrofit.

FRA based its estimates on two tank car studies—"Characteristics of 103, 104 and 111 tank Cars," Arthur D. Little, Incorporated, 1981, and "Tank Car Study, Task 9—Additional Data Analysis," Dynatrend Incorporated, 1981. The starting point was the 21,378 type 105 and 111 cars identified in the Dynatrend study as being involved in the transportation of the subject hazardous materials. FRA then excluded those cars with a capacity under 18,500 U.S. gallons (15,688 cars). Of the remaining 5,690 cars, 2,618 were found to have adequate safety features, leaving 3,072 cars which would require the retrofit. Forty-six of these cars were judged to have a value too low to justify the cost of the retrofit, and were therefore assumed to be retired or placed in other service. (The cost of purchasing new cars to replace those to be retired is included in the total cost estimate of the retrofit program.)

Several opponents of the proposed rule thought FRA and MTB gave inadequate consideration in its estimation of the benefits to be derived from the additional safeguards to the protection afforded by the double shelf couplers. We do not agree. In preparing its estimation of the incidents/accidents which could be prevented by the proposed requirements, FRA reduced the expected benefits to eliminate those benefits attributable to double shelf couplers. In other words, the estimated HM-175 benefits are in addition to the benefits expected from the couplers.

According to a study by the AAR (Phase 02 Report on Effectiveness of Shelf Couplers, Head Shields and Thermal Shields, Supplement AAR R-482, August 20, 1981), the HM-144 retrofit of Class 112 (114) tank cars with double shelf couplers, head shields, and thermal protection has proven to be approximately 85 percent effective in preventing head punctures and ruptures due to fire. Since the HM-144 retrofit for 112/114 cars is very similar to the proposed retrofit for 105/111 cars, this effectiveness rate could have been used in our HM-175 analysis if double shelf couplers had not already been installed on 105 and 111 cars. FRA believes 80 percent to be a reasonable estimate of effectiveness for thermal head protection beyond that protection provided by the couplers. This effectiveness rate would have to drop to 51.5 percent before there would be a

break-even benefit/cost ratio, even ignoring the chances of a catastrophic event.

Indeed, the estimate of benefits does not include the possibility that a major catastrophic event may be prevented, even though at least one catastrophic accident involving a 105/111 car carrying hazardous materials would be likely in the absence of the HM-175 requirements. Had the analysis included the likelihood of a catastrophic accident, the benefit/cost ratios of all alternatives would have increased substantially. This is especially so in light of the fact that HM-175 deals with the larger (over 18,500 U.S. gallon) tank cars which, because of both size and rate of utilization, would be most likely to be involved in a catastrophic event.

Several commenters recommended that this rule be postponed to permit further testing and evaluation of the performance of existing specification 105 tank cars in accident situations. MTB and FRA do not concur with this recommendation. Since 1970, FRA has sponsored an extensive research program on the performance of flammable gas tank cars in simulated accident situations. The Railway Progress Institute (RPI) and the AAR have also sponsored their own research program on flammable gas tank cars, and FRA, the RPI, and the AAR have collaborated on many projects.

Most of the tests in these programs utilized specification 112/114 tank cars. However, because of the similarities between flammable gas specification 112/114 cars and flammable gas specification 105 cars, FRA does not believe that the results would have been significantly different.

FRA did conduct fire simulation tests of representative insulation systems used in existing specification 105 tank cars and concluded that, while these systems provide more protection than is present on uninsulated specification 112/114 cars, the protection is much less than now required by 49 CFR 179.105-4 for specification 112/114 tank cars. Section 179.105-4 requires that a thermal shield provide sufficient protection so that the back face temperature of a test plate not exceed 800°F in a 100 minute pool fire simulation. By contrast, most of the existing insulation systems on specification 105 cars reached 800° in only 20-40 minutes of testing. While the time period is longer than for the uninsulated 112 and 114 tank cars prior to being retrofitted, the difference is not considered significant enough to reduce the benefits expected from a high temperature thermal retrofit of specification 105 tank cars.

Instead of repeating its past testing program on flammable gas tank cars to address specification 105 tank cars, FRA plans to focus its limited research resources on determining what, if any, additional protection is required for materials and tank cars not addressed in Dockets HM-144, HM-174, and HM-175.

Several commenters recommended that no changes in safety valve sizes on existing specification 105 tank cars be mandated until MTB and FRA analyzed an AAR report entitled, "A Study of Pressure Tank Car Safety Relief Valve Sizing Requirements." MTB and FRA have analyzed that report, both for this rulemaking and in the related docket, HM-174. A detailed assessment of the AAR report is in the docket. A detailed discussion of the report is included in the preamble to Amendment No. 173-172, 179-34, Docket HM-174, which is published in today's Federal Register.

Based on our analysis of the AAR report and on an independent study of safety valve sizing sponsored by the FRA and conducted by the IIT Research Institute (IIRI), MTB and FRA conclude that the valves on existing 105 and 111 tank cars carrying flammable gases and ethylene oxide are not adequate even if the tank cars are equipped with a thermal protection system that results in a maximum temperature of 800°F in a 100-minute simulated pool fire test. However, based on the IIRI calculations, MTB and FRA are allowing an option whereby additional thermal protection can be provided so that the currently sized safety valves on all existing specification 105 and 111 tank cars carrying flammable gases or ethylene oxide may continue in use.

One commenter requested that an exception be made for its specification 105 anhydrous ammonia tank cars that have thick ($\frac{3}{8}$ " or $\frac{1}{2}$ ") heads/jackets. These jackets apparently do not satisfy the requirements of either § 179.100-23 or § 179.105-5. The commenter provided insufficient information (e.g., type of steel used for the jacket) to enable MTB and FRA to evaluate the merits of this request.

Section-by-Section Analysis

Section 173.124 Ethylene Oxide

Paragraph (a)(5) of § 173.124 is amended to require that each specification 105 tank car built before September 1, 1981, with a capacity in excess of 18,500 U.S. gallons, conform to specification 105] when transporting ethylene oxide after December 31, 1986. (As a result of earlier actions taken in Docket HM-174, specification 105 tank

cars built after August 31, 1981, are currently required to have tank head and high temperature thermal insulation when transporting ethylene oxide.) Requiring a specification 105J tank car for ethylene oxide means that by December 31, 1986, existing specification 105 tank cars in excess of 18,500 U.S. gallons must be retrofitted with high temperature thermal protection, tank head protection, and larger capacity safety relief valves (or additional thermal protection).

Paragraph (a)(5) is also amended to require that each specification 111 tank car, with capacity in excess of 18,500 U.S. gallons, conform to specification 111J when transporting ethylene oxide after December 31, 1986. Thus, by December 31, 1986, each existing large capacity specification 111 tank car in ethylene oxide service must be retrofitted with high temperature thermal protection, tank head protection, and larger safety valves (or additional thermal protection). A new subparagraph (a)(5)(v) is added to specify that specification 111 tank cars built after March 1, 1984 are not permitted to transport ethylene oxide.

Section 179.314 Requirements for Compressed Gases in Tank Cars

This section is amended to require that existing specification 105 tank cars (those built prior to September 1, 1981) used to transport anhydrous ammonia, and with a capacity exceeding 18,500 U.S. gallons capacity, be retrofitted by December 31, 1986, with lower half tank head protection, i.e., conform to specification 105S. The final rule further requires that existing specification 105 tank cars with a capacity exceeding 18,500 U.S. gallons, used to transport flammable gases, be retrofitted by December 31, 1986, to conform to specification 105J. Consistent with the proposed rule, the final rule also requires that by December 31, 1986, each specification 111 tank car with a capacity exceeding 18,500 U.S. gallons, used to transport flammable gases, shall conform to specification 111J. In response to a comment by AAR, the final rule includes a sentence in "Note 23" that provides that specification 111 tank cars built after March 1, 1984 are not authorized to transport flammable gases.

Section 179.102-12 Ethylene Oxide

Section 179.102-12 is amended to require that each existing specification 105 tank car (built prior to September 1, 1981, and with a capacity exceeding 18,500 gallons) used to transport ethylene oxide be retrofitted by December 31, 1986, with high

temperature thermal protection, tank head protection, and a safety valve sized in accordance with § 179.105-7 if it is to continue in ethylene oxide service. The safety valve sizing requirement means that either a large capacity valve or additional high temperature insulation must be installed.

Section 179.105-7 Safety Relief Valves

Section 179.105-7 is amended by adding paragraph (d) to permit continued use of the currently installed valve on specification 105 cars transporting flammable gases if the thermal protection exceeds the minimum thermal protection required in § 179.105-4. This provision as proposed has been modified in several respects. First, the performance requirement for the additional thermal protection has been revised to require that, in the simulation pool fire tests required in § 179.105-4, none of the thermocouples on the uninsulated side of the steel plates indicate a plate temperature in excess of 550°F (instead of 540°F in the proposed rule). This minor change reflects additional data developed by FRA after publication of the notice of proposed rulemaking.

Second, all existing specification 105 and 111 tank cars carrying flammable gases and ethylene oxide (instead of only those cars with a manway cover of less than 18 inches diameter as proposed) will be allowed to use the option of additional thermal protection in lieu of a larger capacity safety relief valve. This change has been made to give tank car owners additional flexibility in satisfying the safety objectives of this rulemaking.

Third, the option to use additional thermal insulation instead of using a larger capacity safety relief valve is limited in paragraph (d) to cars transporting flammable gases. This has been done because today's amendment to the final rule in Docket HM-174 provides a similar option specifically developed for cars transporting ethylene oxide. Under that provision (§ 179.105-7(c)), the use of 550°F material permits a safety valve sized with a flow capacity as low as 1100 scfm at 85 psi, which corresponds to the currently utilized valve.

Fourth, the final rule permits the use of the currently installed valve if the additional thermal insulation is provided, rather than the use of a valve sized in accordance with the formula for compressed gases in insulated tanks. This change has been made to make clear that the currently installed valves are acceptable. The change has also been made because most valves on the tank cars are sized with a capacity

greater than the minimum capacity required under the formula. FRA wants to make clear that the valve capacity may not be reduced below its current level. (Nothing in the rule would preclude increasing the capacity of the safety relief valve.)

Section 179.106-1 General

Section 179.106-1 is amended to require that existing specification 105 tank cars manufactured to the specifications of the Canadian Transport Commission conform to the same standards prescribed for DOT specification 105 tank cars.

Section 179.108-3 Previously Built Cars

Section 179.108-3 is amended to establish performance requirements for specification 105S and 105J tank cars built before September 1, 1981. The requirements for the 105S and 105J tank cars in this section are identical to the requirements in § 179.106-2 for new cars.

Section 179.200-27 Alternative Requirements for Tank Head Puncture Resistance Systems

This section is added to clarify that specification 111 tank cars may utilize a head shield as prescribed in § 179.100-23 instead of meeting the puncture resistance requirements in § 179.105-5.

Section 179.202-18 Ethylene Oxide

Paragraph (a)(10) is added in § 179.202-18 to require that each specification 111 tank car used after December 31, 1986, for the transportation of ethylene oxide, with a capacity exceeding 18,500 U.S. gallons, conform to class 111J. Paragraph (a)(11), though not included in the NPRM, is also added. It specifies that specification 111 tank cars built after March 1, 1984, are not permitted for the transportation of ethylene oxide. This addition merely reflects the previous action of the AAR Tank Car Committee and is added in response to the AAR's comment.

Section 179.203 Special Requirements for Specification 111 Tank Cars

The final rule adds § 179.203 which sets out special requirements for specification 111 tank cars that parallels section 179.106 for specification 105 tank cars. One change from the proposed rule is the deletion of the words "before October 1, 1981" from paragraph (d). Paragraph (d) requires that specification 111 tank cars built to specifications promulgated by the Canadian Transport Commission must be equipped in accordance with § 179.203-2 by December 31, 1986. The change means

that all specification 111 cars over 18,500 U.S. gallons transporting flammable gases or ethylene oxide, after December 31, 1986, must conform to specification 111]. Also, a paragraph (e) is added to specify that specification 111 tank cars built after March 1, 1984 are not permitted for the transportation of flammable gases or ethylene oxide.

Economic Impact

MTB has determined this final rule is not a "major rule" under the terms of Executive Order 12291, but it is "significant" under DOT procedures (44 FR 11034). A regulatory evaluation and environmental assessment is available in the Docket at the address shown above. Based on the comments received in response to the NPRM and the information contained in the regulatory evaluation, I certify that this final rule will not have a significant economic impact on a substantial number of small entities under the provisions of the Regulatory Flexibility Act.

List of Subjects in 49 CFR Parts 173 and 179

Railroad safety, Hazardous materials transportation.

In consideration of the foregoing, Parts 173 and 179 of Title 49 Code of Federal Regulations are amended as follows:

PART 173—SHIPPERS—GENERAL REQUIREMENTS FOR SHIPMENTS AND PACKAGINGS

1. In § 173.124, is amended by adding paragraphs (a)(5) (iii), (iv), and (v) to read as follows:

§ 173.124 Ethylene oxide.

- (a) * * *
- (5) * * *

(iii) After December 31, 1986, each specification 105 tank car built before September 1, 1981, having a water capacity (shell full volume, including manways) exceeding 18,500 U.S. gallons and used for the transportation of ethylene oxide shall conform to specification 105J.

(iv) After December 31, 1986, each specification 111 tank car with a water capacity (shell full volume, including manways) exceeding 18,500 U.S. gallons, used for the transportation of ethylene oxide, shall conform to DOT specification 111J.

(v) Specification 111 tank cars built after March 1, 1984, are not permitted for the transportation of ethylene oxide.

2. In § 173.314, notes 23 and 24 to the table in paragraph (c) are revised to read as follows:

§ 173.314 Requirements for compressed gases in tank cars.

(c) * * *

Note 23.—Each specification 105 tank car built after August 31, 1981, shall conform to class DOT-105J. After December 31, 1986, each specification 105 tank car built before September 1, 1981, and with a water capacity (shell full volume, including manways) exceeding 18,500 U.S. gallons shall conform to class DOT-105J. After December 31, 1986, each specification 111 tank car with a water capacity (shell full volume, including manways) exceeding 18,500 U.S. gallons shall conform to class DOT-111J. Specification 111 tank cars built after March 1, 1984 are not authorized for the transportation of flammable gases.

Note 24.—Each specification 105 tank car built after August 31, 1981, shall conform to class DOT-205S. After December 31, 1986, each specification 105 tank car built before September 1, 1981, and with a water capacity (shell full volume including manways) exceeding 18,500 U.S. gallons, shall conform to class DOT-105S.

PART 179—SPECIFICATIONS FOR TANK CARS

3. In § 179.102-12, paragraph (a)(10) is added to read as follows:

§ 179.102-12 Ethylene oxide.

(a) * * *

(10) After December 31, 1986, each tank built before September 1, 1981, having a water capacity (shell full volume, including manways) exceeding 18,500 U.S. gallons and used for the transportation of ethylene oxide shall conform to class DOT-105J.

4. In § 179.105-7, paragraph (d) is added to read as follows:

§ 179.105-7 Safety relief valves.

(d) Notwithstanding paragraph (a) of this section, and §§ 179.100-15, 179.102-11, and 179.200-18, a specification 105 or 111 tank car built before March 1, 1984 to transport any flammable gas may use the currently installed safety relief valves, if—

(1) The tank car is equipped with a thermal protection system in accordance with § 179.105-4; and

(2) In all of the three consecutive simulation pool fire tests required by paragraph (d) of § 179.105-4, none of the thermocouples on the uninsulated side of the steel plate indicates a plate temperature in excess of 550°F.

5. In § 179.106-1, paragraph (e) is added to read as follows:

§ 179.106-1 General.

(e) Notwithstanding the provisions of § 173.8 of this subchapter, no specification 105 tank car manufactured before September 1, 1981, to specifications promulgated by the Canadian Transport Commission having a water capacity (shell full volume, including manways) exceeding 18,500 U.S. gallons may be used after December 31, 1986, to transport hazardous materials unless it is equipped in accordance with § 179.106-3.

6. Section 179.106-8 is revised to read as follows:

§ 179.106-3 Previously built cars

(a) Each specification 105A tank car built before March 1, 1981, shall be equipped with a coupler restraint system that meets the requirements of § 179.105-6.

(b) Each specification 105S tank car built before September 1, 1981, shall be equipped with:

(1) A coupler restraint system that meets the requirement of § 179.105-6; and

(2) A tank head puncture resistance system that meets the requirements of § 179.105-5.

(c) Each specification 105J tank car built before September 1, 1981, shall be equipped with:

(1) A coupler restraint system that meets the requirements of § 179.105-6;

(2) A thermal protection system that meets the requirements of § 179.105-4;

(3) A safety relief valve that meets the requirements of § 179.105-7; and

(4) A tank head puncture resistance system that meets the requirements of § 179.105-5.

7. Section 179.200-27 is added to read as follows:

§ 179.200-27 Alternative requirements for tank head puncture resistance systems.

Class DOT 111 tank cars required to have puncture resistance systems in accordance with § 179.105-5 may, as an alternative, be equipped with a head shield at each end of the car conforming to the requirements of § 179.100-23.

8. In § 179.202-18, paragraphs (a)(20) and (a)(11) are added to read as follows.

§ 179.202-18 Ethylene oxide.

(a) * * *

(10) After December 31, 1986, each tank built with a water capacity (shell full volume, including manways) exceeding 18,500 U.S. gallons shall conform to class DOT-111J.

(11) Specification 111 tank cars built after March 1, 1984, are not authorized for the transportation of ethylene oxide.

9. Sections 179.203 and 179.203-1 and 179.203-3 are added to read as follows:

§ 179.203 Special requirements for specification 111 tank cars.

§ 179.203-1 General.

(a) In addition to the requirements of this section, each tank car built under specification 111 shall meet the applicable requirements of §§ 179.200, 179.201, and 179.202.

(b) Notwithstanding the provisions of §§ 179.3, 179.4, and 179.6, AAR approval is not required for changes in or additions to specification 111 tank cars in order to comply with this section.

(c) Notwithstanding the provisions of § 173.8 of this subchapter, no specification 111 tank car manufactured to specifications promulgated by the Canadian Transport Commission may be used after February 28, 1985, to transport hazardous materials in the United States unless it is equipped with a coupler vertical restraint system that meets the requirements of § 179.105-6.

(d) Notwithstanding the provisions of § 173.9 of this subchapter, no specification 111 tank car manufactured to specifications promulgated by the Canadian Transport Commission and with a water capacity (shell full volume, including manways) exceeding 18,500 U.S. gallons, may be used after December 31, 1986, to transport flammable gases or ethylene oxide unless it is equipped in accordance with § 179.203-2.

(e) Specification 111 tank cars built after March 1, 1984 are not permitted for the transportation of flammable gases or ethylene oxide.

§ 179.203-2 Previously built cars.

(a) Each specification 111 tank car built before March 1, 1984, shall be equipped with:

(1) A coupler vertical restraint system that meets the requirements of § 179.105-6;

(2) A thermal protection system that meets the requirements of § 179.105-4;

(3) A safety relief valve that meets the requirements of § 179.105-7; and

(4) A tank head puncture resistance system that meets the requirements of § 179.105-5.

§ 179.203-3 Stenciling.

Each specification 111 tank car built before March 1, 1984 that is equipped as prescribed in § 179.203-2(a) shall be stenciled by having the letter "J" substituted for the letter "A" in the specification marking.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, Appendix A to Part 1)

Issued in Washington, D.C., on January 24, 1984.

L. D. Santinan,

Director, Materials Transportation Bureau.

[FR Doc. 84-2377 Filed 1-26-84; 8:45 am]

BILLING CODE 4910-60-M